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## (54) MEMBRANE SEPARATION APPARATUS

(57) Abstract:

**PURPOSE:** To dispense with the manufacturing of a complicated recovery pipe, by providing a filtrate discharge bore opened from a liquid collection line forming recessed parts to the outer peripheral edge of a plate and a recovery line forming hole coming to a cylindrical form at the time of lamination to each plate and connecting both of them by a tube.

**CONSTITUTION:** In a plate-and-frame type membrane separation apparatus, each plate 3 is provided with a filtrate discharge bore 5, which is opened to the outer peripheral edge surface of said plate, by drilling so as to communicated with the inner surface side formed by the peripheral edges of recessed parts 2 for forming filtrate collection lines 2' and a metal cup 6 is connected to the discharge bore 5. Further, a hole 7 for forming a filtrate recovery line 7' showing a cylindrical space by inserting a circular gasket 8 at the time of lamination is provided to each plate 3. A receiving step 10 is connected to the guide hole 9 provided to the cut edge surface of the forming hole 7 by drilling, and this receiving step 10 and the metal cap 6 are connected by a transparent tube 11. The filtrate of each layer is introduced into the recovery line 7' through the discharge bore 5, the metal cap 6, the tube 11, the receiving step 10 and the guide hole 9 and collectively sent to the next process.

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